

# The Material Culture of Oruarangi, Matatoki, Thames.

## 3. Stone Implements and Ornaments.

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The interest attached to the stone implements and ornaments from Oruarangi, renders it necessary to devote the whole of this paper to their consideration. With the exception of the greywacke adzes, the quantity of material under the various grouped headings was small, but it certainly lacked nothing in value. In the case of the greywacke adzes it was fortunate that a sufficient number was available to make it possible to attempt the definition of certain types.

### Stone Adzes or Toki.

Stone adzes (*toki*) were well represented from the site both in number and quality. A tally revealed seventy-five fairly perfect specimens, ninety-two damaged specimens and eighteen fragments. From the available material two types, into which most of the adzes could be grouped, were readily distinguished. These two types, referred to as A and B, will be considered first and those which do not fit into this classification will be studied later.

Before the types are defined, an enumeration of the numbers which are referable to the respective types should be of interest. For the purposes of this classification all adzes whether perfect or imperfect are included, except where they are too fragmentary for accurate determination. The result registers 119 classed under Type A and 41 under Type B, or a proportion of almost three to one. From a preliminary study of perhaps 3,000 Maori adzes in the Museum, from the Auckland Province, the predominance of Type A in the locality is not at all unexpected; in fact the writer is surprised to find so many of Type B, a type usually found North of Auckland. Type A, on the other hand, is the type normally found in the Thames Valley and Waikato districts. The terminology used to describe the adzes and chisels follows that suggested in the composite article by Buck, Emory, Skinner and Stokes (1930, p. 174).

### Description of Type A.

The type is quadrangular, relatively long, narrow and thick. A more detailed description is as follows:—The front is slightly convex transversely and definitely convex longitudinally. The back is flattened while the sides slope slightly from the back outward to the front. The edge is rounded and is the widest part of

the adze. The bevel is usually formed at an acute angle and extends back a fair distance, frequently as much as 33 mm. The chin is usually distinct, often slightly prominent, and where this is so it forms the thickest part of the adze. In a few examples the bevel merges into the blade without showing any trace of a chin. The poll displays a rectangular surface usually left rough, though in a few instances it is polished. Details of the dimensions of adzes of this type are given in a table at the end of this section.

### Description of Type B.

Adzes of this type are much scarcer than those of type A. As mentioned above, they are really characteristic of the adzes found in districts north of Auckland. The type then is quadrangular, relatively short, broad and thin.

The front is slightly convex transversely and longitudinally. The back is flattened, with the sides sloping outwards from the back to the front. Usually the margins separating front and back from the sides are clearly defined. The edge is somewhat rounded and forms the widest portion of the adze. The bevel is short and steep, which is a characteristic feature of North Auckland adzes. Skinner (1921, p. 76) referring to North Auckland adzes remarked on "the frequent presence of a steep bevel to form the cutting edge." The chin is clearly defined and usually straight, though in a few instances it is slightly rounded. The poll presents a rectangular surface usually unpolished.

The important differences between the two types are:—

- (a) Type A has a long, sloping bevel; Type B has a short, steep bevel.
- (b) Type A is relatively much thicker than Type B.
- (c) Type A is relatively more narrow than Type B.
- (d) Type A tapers towards the poll; Type B tapers slightly but in not such a pronounced manner.

In order to assist identification of the types, two of each are illustrated (Pl. 2, figs. 1-4) and the table at the end of the section gives dimensions of a representative series from both types. A few remarks will be devoted to the adzes illustrated. Fig. 1, although badly chipped on one side, and on a portion of the edge, possesses all the characteristic features of Type A. The various surfaces are highly polished except on the poll. The chin is well defined, rounded and somewhat prominent. The small specimen, fig. 2, has been carefully finished and polished on all surfaces. The edge is still keen and without a flaw. No definite chin is noticeable, as the bevel simply merges into the rest of the blade. Despite the chips broken off the edge, fig. 3 is a nicely finished adze and the flaws are either the result of use or of accident. It is a thoroughly good representative of Type B, except for the chin, which is not so straight as in the majority of adzes of this group. Its smaller companion, fig. 4, is in all features an excellent example of its type. Unlike the former specimen, it possesses a straight chin. Viewed from any angle

it is essentially a North Auckland adze. Careful research will be necessary to map out the distribution of this type, but on the present incomplete information it certainly seems that the range will be extended south of Auckland.

In the absence of a detailed description of types of adzes from Waikato and North Auckland, the writer considers it wiser to term the Oruarangi types A and B. If later when types for those areas are established, it be found that the Oruarangi types conform to such description, then the types A and B can be absorbed into their respective classifications. Nevertheless types A and B may in the meantime be regarded as Waikato and North Auckland types.

Of especial interest is an adze (Pl. 5, fig. 5) which does not conform to either of the above-mentioned types. Apparently, as the result of an accident, the front is badly chipped to such an extent that it is impossible to say whether it was originally polished or not. This fractured portion extends beyond the shoulder to the tang. The tang is very pronounced and possesses a wide, shallow transverse groove which terminates in a ridge from which the remainder of the tang falls away to the poll. The sides are still rough and show practically no signs of polish. The back is polished to a point almost opposite the tang, whence to the poll the surface is rough, with only a suspicion of polish. No portion of the edge remains for examination. Although a part of the bevel has been broken, sufficient remains to indicate that it has been cut at a steep angle. The chin is lacking, as the bevel simply merges into the back. The poll presents a square surface, rough all over and slightly fractured at one side. Tanged adzes are rare in the Auckland provincial area, but adzes with a groove in the tang are more rare. Best (1912, Plate VII, fig 97) illustrates a specimen with a grooved tang, but he does not (p. 278) give any clue as to the locality of its origin. He mentions that the groove, or as he terms it the "deep hollow," is intended to "accommodate and contain the lashing."

The largest adze (Pl. 3, fig. 6) in the collection, although unfinished, is of interest because it illustrates stages in the process of manufacture. In any case the work is sufficiently far advanced to give an idea of its ultimate shape. On all surfaces it shows evidence of both chipping and bruising, but no attempt at grinding or polishing. Chipping predominates on the back, but the reverse is true of the front and sides. Noticeable features are length and thickness in proportion to the width, and most of all the gentle slope of the bevel, which stretches back approximately 95 mm. This class of adze was most likely used for heavy work, such as reducing a plank to the required thickness. Best (1912, Plate III, fig. 6) illustrates an adze, the side view of which in general outline corresponds very closely to the specimen under discussion, but unfortunately it is unlocalised. The dimensions are given in the table.

An adze of considerable length is fig. 7. It has some points of resemblance to Type A, but not sufficiently strong to warrant

inclusion in the type. The front is convex longitudinally and transversely and is carefully ground and roughly polished, except for an area, the length of which extends from the poll some 40 mm. Two flaws near the edge are evidently the result of an accident after the polishing process had been completed. Both sides require further grinding and polishing before a smooth surface would be apparent. The back is practically flat, but there are numerous chipped depressions which require attention. The rounded edge is ragged and shows indications of tearing, which suggests that the adze was actually used, although not well finished. The bevel is fashioned at an angle of, roughly, 45 degrees and merges into the back, no trace of a chin being visible. The poll, one should judge, was never finished, as it displays a very narrow surface for inspection.

The tables in this paper relating to implements are based with some modification on those used by Emory (1928, p. 133), who in turn follows H. D. Skinner. Thus the maximum length and maximum thickness are given, while the width is measured at the edge, which is of course the greatest width of the implement.

Museum No.	Fig.	Weight. ozs.	Max. Length. mm.	Max. Thickness. mm.	Edge. mm.	Material.	Remarks.
19598.64	1	20.5	181	30	Fractured	Greywacke	Type A
" .15	2	3	79	18	40	"	" "
" .54	—	15.5	154	27	56	"	" "
" .50	—	12.75	140	29	51	"	" "
" .18	—	9.5	125	27	45	"	" "
" .7	—	4.75	96	22	42	"	" "
" .42	—	2.25	73	18	31	"	" "
19634. 1	—	11	141	25	54	Greywacke	" "
19598.45	3	13	141	22	70	"	Type B
" .16	4	3.5	69	24	45	"	" "
" .33	—	7.5	118	22	49	"	" "
" .30	—	4.5	92	22	43	"	" "
" .57	—	.75	44	11	26	"	" "
19634. 5	—	1.5	55	13	31	"	" "
22694	5	18.5	32	—	—	"	" "
19598.65	6	72	297	56	68	Greywacke	grooved tang unfinished
19598.66	7	29.5	217	32	61	"	" "

### Chisels (Whao).

Only two presentable chisels for examination, excluding those of greenstone, are included in the collection. One, No. 19598.23, is remarkable for the steady tapering of the back, which is 31 mm. in width at the edge and tapers off to 13 mm. at the poll. This shrinkage takes place in a length of 98 mm. The thickness (17 mm.) results in a stout chisel capable of being used for heavy work. A considerable polish imparted to its various surfaces does not hide several unpolished patches. Unfortunately, the edge is badly chipped, but sufficient of the bevel is intact to show that it is convex transversely and ends in a

rounded chin. The back is more narrow than the front, consequently the sides slope outwards from back to front. It is of a suitable length for use either as a hafted or an unhafted chisel.

The possession of a groove on each of the sides adds to the interest of the chisel illustrated in Pl. 5, fig. 8, for it is a feature seldom observed. It is the only one of its kind recorded from Oruarangi. The grooves vary in width from 3-5 mm. and cut into the front and back to a depth of 4 mm. It will be recognised that for the size of the implement these grooves are relatively deep and were probably to facilitate hafting. Although described and referred to as a chisel, there is the possibility that it may have been hafted and used as an adze.

The front is convex longitudinally and transversely except at the poll end, where it displays a long facet. The sides are likewise convex both transversely and longitudinally, a trait not often noticed in ordinary stone chisels. The back is flattened and polished in places, with rough parts at intervals along its length. The edge, which is narrow, rounded and keen, forms the narrowest part of the blade. The bevel is convex longitudinally, long, highly polished with a "skewed" chin. The poll is squared off and presents a surface which is roughly triangular.

It is regrettable that a greywacke chisel in the collection is broken, as it exhibits sides which slope markedly inward, from front to back. Thus at a point 38 mm. from the edge, the front measures 25 mm. in width, while the back at the same point measures 13 mm. Highly polished over all surfaces, except at the fractured end, the portion preserved indicates what an excellent example it might have been had it been whole.

Museum No.	Fig.	Weight. ozs.	Max. Length. mm.	Max. Thickness. mm.	Edge. mm.	Material.	Remarks.
19598.23	-	2.75	98	17	31	Greywacke	Edge damaged
19614	8	2.25	104	18	8	„	

### Greenstone Implements and Ornaments.

Implements or ornaments manufactured from greenstone are relatively scarce in the collection. They are confined to a few adzes, chisels, pendants (including odd fragments of all three types), fragments of *hei-tiki* and a piece of a *mere*. Nevertheless, the lack of quantity of material is offset by the interest pertaining to many of the articles.

### Green Stone Adzes (Toki Pounamu).

The finest and largest adze (Pl. 4, fig. 9) is very slender in shape and compares very favourably both for appearance and polish with the better class of greenstone adzes. The front is

slightly convex longitudinally, and well polished. It displays a slight chamfer on both of the outer margins, which commences not quite half way from the edge, broadens to as much as 9 mm. in places and finally narrows down and fades away as it approaches the poll. The sides are partially polished and exhibit crevices which have not been ground out. One side still displays vestiges of the cuts originally made to sever the piece from another piece of greenstone. The back is flattened, polished, and its appearance enhanced by the speckled nature of the stone. The edge is rounded, somewhat blunt and forms the widest part of the blade. The bevel slopes very gradually and terminates in a rounded chin which is not very clearly marked. The poll is probably unfinished, as the surface is very rough and uneven and has only a faint suspicion of grinding. It was possibly hafted without finishing the poll, as the edge shows definite signs of use.

An adze of a dark green colour termed *kawakawa* by the Maori is seen in fig. 10. The front is convex longitudinally, highly polished and well finished except near the poll. The sides bear evidence of the original cuts and also of the fracture where the stone has been severed from another piece. The back is flat and the polish extends over the whole surface except for a small portion near the poll. The edge is rounded, slightly skewed and shows unmistakable signs of "tearing" as the result of use. The bevel is rounded and extends back 20 mm., where it terminates in a faintly marked chin. The poll is rough and unpolished.

The charm of a specimen which features a stage or stages in the process of manufacture is experienced in examining Pl. 5, fig. 11. This specimen illustrates a broad adze in process of division to form three chisels. The method of cutting greenstone has been referred to by Chapman (1891, p. 498), who says: "In cutting a slab in two the ancient workman lightened his labours by working his cuts from both sides, and, when they nearly met, knocking the piece off. The rough break is sometimes a third of an inch through or even more; and to effect this considerable force, or a heavy blow, must have been necessary." He also states (p. 497) that "greenstone was cut by a very blunt instrument." In this example the incisions admirably illustrate Chapman's remarks. Both on the back and front of the adze two cuts have been commenced which vary between 3-5 mm. at the mouth and become progressively more narrow with increasing depth, and appear on observation as V-shaped grooves. These suggest that the cutting implement used possessed sloping sides terminating in a comparatively blunt cutting edge. In the groove seen on the left side of the back the depth is 2.5 mm., and a similar depth is registered for the corresponding groove on the front of the adze. If one bears in mind that the maximum thickness of the specimen is 11 mm., this indicates that the two grooves penetrate almost half the adze. Considering the thickness of the specimen, the writer judges that the cuts are not of sufficient depth to allow the detachment of the piece without additional work.

Adzes were not infrequently divided to form two or three chisels. Chapman (1891, p. 500) mentions that a "broad axe" (adze) belonging in 1891 to Mr. John White, "is cut longitudinally down the centre to make two chisels of ordinary proportions." In the Auckland Museum there are at least five adzes which show similar treatment.

The widths of the chisels partially formed in fig. 11 are respectively 15 mm., 7 mm., and 10 mm.

Two small, broad adzes (figs. 12, 13) are included here, chiefly for comparison with the greywacke specimen of Type B. It has yet to be shown that the greenstone adzes of any given area conform to types in ordinary stone typical of that area. In part some resemblance may be expected, but two items appear to operate against complete agreement. Firstly, the comparative scarcity of greenstone tended to the production of relatively thin implements in order to conserve the supply of material and, secondly, the greenstone was capable of finer treatment than ordinary stone used for other implements. It is of interest that both adzes resemble those described under Type B, particularly in the short, steep bevel and straight chin.

## GREENSTONE ADZES.

Museum No.	Fig.	Weight. ozs.	Max. Length. mm.	Max. Thickness. mm.	Edge. mm.	Material.	Remarks.
19552	9	26	263	22	65	Greenstone	
19553. 2	10	3.5	87	14	41	"	In process of division
19553. 4	11	1.5	50	11	41	"	
19553. 5	—	2	56	13	37	"	
" . 3	12	.75	44	13	33	"	
" . 1	13	.75	41	9	39	"	

**Greenstone Chisels (Whao Pounamu).**

Greenstone chisels are scarce, but the few obtained indicate a high degree of workmanship, and with one exception are remarkable for their diminutive size. Of outstanding interest is a small chisel (Pl. 5, fig. 14) which is in process of division, evidently to form two slender chisels, both of which when finished would have been narrower than any of the perfect chisels from this area. When measured at the edge, the two partially formed chisels are 5.5 mm. and 4 mm. respectively, whereas the smallest Oruarangi chisel is 8 mm. in width. The greatest thickness is only 4 mm. Had these two chisels been completed they would have been excellent for fine work. This specimen illustrates very clearly the method of cutting the stone by a sawing process—a method referred to earlier in this paper.

The smallest specimen (fig. 15), which has been carefully finished and polished on all surfaces, has a keen edge, a well

defined bevel bounded by a straight chin, and has been drilled at the poll end for purposes of suspension from the ear or neck, probably the former. Unfortunately, the poll at this point is fractured, but half of the hole still remains. Although perforated chisels are not uncommon, there is only one specimen in this collection.

By suspending such small implements from the ear, the owner was enabled to guard against the loss of a valuable implement, and furthermore he provided himself with an ornament which was doubtless greatly admired. The perforation in such chisels is placed near the poll and would not have been of any value as an aid to secure hafting. Banks (1896, p. 235) referring to ornaments worn in the ear, says "they hang from them by strings many very different things, often a chisel and bodkins made of a kind of green talc (greenstone) which they value much." Best (1912, pp. 116, 117, 289) makes reference to these matters at some length. Owing to the extreme smallness of this specimen (length 20 mm., greatest width 9 mm.) it could have been easily misplaced. This implement is the second smallest greenstone chisel in the Auckland Museum. Best (1912, p. 285) refers to a tiny chisel in the Dominion Museum which he says "is probably one of the smallest stone cutting tools yet recorded in this country." The same author (1912, p. 286) gives the dimensions of the chisel, which are inserted here for comparison with the Oruarangi specimen. It is  $\frac{3}{8}$  inch in length,  $\frac{5}{16}$  inch at the widest part and "about  $\frac{1}{16}$  inch thick in the middle." Converting these dimensions into the metric system we have length 16 mm., greatest width 8 mm. and thickness 1.5 mm. The dimensions of the Oruarangi specimen are length 20 mm., greatest width 9 mm., thickness 4.5 mm. It will be seen that the correspondence is fairly close, but the honours go to the Dominion Museum specimen. Some slight allowance has to be made too for the break at the poll end of the Oruarangi example, which would probably have added 1.5 mm. to its length.

A small chisel (fig. 16) badly damaged on the poll and on the front, back and sides in the vicinity thereof, is of interest owing to the fashion in which the rounded edge is skewed. This feature of greenstone chisels has been referred to by Firth (1925, p. 286) who quotes a specimen in the British Museum which has a skewed edge. He defines a "skew-chisel" as one which has "the cutting edge oblique to the major axis of the blade"; a definition which supplies an excellent description of this type of chisel. He does not, however, state what he considered was the special advantage of such an implement, but remarks that "it is evident that the Maori carver, like the European, found that certain delicate work required the adoption of some such contrivance." The present writer, after discussing the matter with skilled European tradesmen, has formed the opinion that possibly it was used for working across the grain. The carver could then have used the chisel straight with the work, thus reducing the possibility of breaking or tearing the fibre, which would be likely to result from a straight cut. The use of a "skew-chisel" would



certainly leave a better finish. This is the only example of a greenstone "skew-chisel" from Oruarangi, but there are other examples in the Auckland Museum, and it is sometimes found in ordinary stone chisels, i.e., those other than greenstone.

In fig. 17 we have an excellent specimen of a well finished chisel, thin in section, possessing a keen edge, a steep bevel and a clearly defined chin. Equipped with a tool of this type the Maori carver could certainly achieve fine work. For finish, shape, appearance and usefulness, it is perhaps the best greenstone chisel from the area. A neat specimen, but lacking the finish of the preceding chisel is fig. 18. The front, back and bevel are smoothly polished except for a small portion of the surface on the back near the poll. The sides, however, display a number of facets which detract from an otherwise finished appearance.

All the chisels considered so far have been relatively thin in section, a feature which supplies a more delicate appearance. Fig. 19 is 3 mm. thicker than the thickest so far dealt with, and this gives it a much stouter and more solid appearance. The bevel, which is 11 mm. in length, or nearly one third of the total length of the chisel, is exceptional, as no other Oruarangi specimen possesses a bevel which slopes so far back. All surfaces, except the poll, are well finished and polished, and it is in every respect a serviceable implement.

The long, narrow chisel illustrated in fig. 20 stands by itself for shape as far as chisels from this area are concerned. It is long, of small diameter and circular in section. Were it not for the carefully fashioned bevel and keen edge, this article would be classed as a pendant. There is no indication of a perforation near the poll, which is still in a rough state. On either side of the back a groove is in evidence, indicating the old cuts where the piece was severed from another piece of stone. Perhaps this chisel is not finished, hence these grooves were not ground out or polished away. A long implement of this type would be equally serviceable whether lashed to a wooden handle and used with a small mallet or held in the hand and manual pressure applied. Possibly this specimen might be better termed a chisel-pendant. Skinner (1916, p. 317) notes two types of chisels; one rectangular in cross-section and the other circular. He considers (p. 317) that the straight greenstone pendant "has descended from the greenstone chisel of the circular type." One could well imagine that the Oruarangi specimen might be intermediate between a chisel and a pendant. The specimens figured and described comprise the whole of the perfect or nearly perfect chisels in this collection, but there are in addition seven fragmentary chisels devoid of any interesting features.

Owing to the paucity of greenstone implements from this locality, it is deemed advisable to describe all the better specimens.

Museum No.	Fig.	Max. Length. mm.	Max. Thickness. mm.	Edge.	Material.	Remarks.
19557.2	14	30	4	11	Greenstone	In process of division.
19554.4	15	20	4.5	9	"	Poll damaged.
„ .7	16	23	5	9	"	Perforated.
„ .5	18	29	6	10	"	Skew-edge.
„ .6	17	33	5	10	"	—
„ .3	19	35	9	11	"	—
19555.1	20	88	12	7	"	Circular in section.

### Greenstone Pendants.

Pendants of greenstone were scarce; only seven perfect specimens are in this collection, six being of the straight type (*kurukuru*) and one of the curved variety (*tautau*). This scarcity is interesting in view of the large number and variety of personal ornaments of bone recorded from the locality (Fisher, 1934, pp. 276-278).

An attractive pendant (Pl. 6, fig. 21) of pale green colour, slender, symmetrical and polished, provides an ornament of considerable beauty. It is convex transversely, on both front and back, the sides parallel, except at the ends, where they taper slightly to form rounded ends. The perforation, which is counter-sunk, is 2.5 mm. at its smallest diameter, is placed in the middle so as not to destroy the balance.

Quite different from the preceding specimen, fig. 22 is short, broad, thick, of bluish colour (*auhunga*) and rectangular in section. Before the hole was attempted a shallow transverse groove was formed in which the hole was bored. It has the suggestion of a chisel at the distal end, but is definitely a pendant.

Fig. 23 corresponds fairly closely in length and colour, but differs in shape from fig. 22. Although apparently four-sided, on closer inspection this appearance is somewhat destroyed by narrow chamfers or facets worked on the margins of the principal surfaces. The distal end is narrowed, and tends to be chisel shaped. The hole at the proximal end is drilled dangerously close to the end, leaving 1.5 mm. to spare.

The solitary curved greenstone pendant (*tautau*) (fig. 24) is not a good specimen. It appears to be fashioned from a fragment perhaps discarded while manufacturing some larger ornament. It lacks finish at both ends. At the proximal end of two attempts at perforation one has met with success.

Museum No.	Fig.	Max. Length. mm.	Max. Width. mm.	Max. Thickness. mm.	Remarks.
19555.8	21	65	7	4	<i>Kurukuru</i>
„ .6	22	45	11	7	„
„ .7	23	43	8	9	„
„ .4	24	56	15	5	<i>Tautau</i>

### Hei Tiki.

The only *hei tiki* (fig. 25) in the collection is of exceptional interest. The head is lacking, due apparently to an accident rather than deliberately headless. Possibly the scarcity of greenstone or of *hei tiki* prevented the possessor from consigning the ornament to the scrap-heap. For such the writer should imagine would be the feelings of the Maori when such a valued article was damaged. Instead, the fractured surface was carefully polished and holes were drilled at intervals along the upper edge so that the ornament continued to serve its original purpose. The four perforations, which are of no small interest, are clearly seen in the back view shown in fig. 25b. The left outside hole has been executed with a small drill point, as the diameter is not very great. On the front this appears as a hole in the shoulder. The left inside hole has broken away and probably preceded the outer example. For the perforation of the right inside hole, which passes through the top of the chest, a short, wide groove was first formed, and then the drill completed the task. Less than 1 mm. remains to prevent this hole breaking away, though this fact is not brought out in the illustration. The fourth hole is placed well back from the edge and bears evidence of the “wobbling” movement of the drill point. This is the only example of a beheaded *hei tiki* that the writer has seen. Skinner (1916) although he figures a number, some of which have broken limbs, does not display any minus the head. In other respects it is a typical specimen.

### “Spool” Ornaments.

This type of ornament (if it be an ornament) is referred to by various names such as: “reel” (Skinner, 1934, p. 106 and other writers), “spool” artifact (Archey, 1927, p. 73). Up to the present there is no certain evidence as to how it was worn, or, if it is not an ornament, used. The present writer prefers the name “spool” ornament, though “reel” certainly describes it equally well.

It is interesting to note that similar articles are found in the United States of America, particularly in the Ohio region. They are thus described in a work edited by Hodge (1910, p. 625), “Small prehistoric objects somewhat resembling spools, the object of which is unknown. They are nearly cylindrical, with incurved sides, perforated lengthwise at the center, and are

made in most cases of sandstone, a few specimens being of baked clay. Their length varies from 1 to  $2\frac{1}{2}$  in. and their diameter rarely exceeds 2 in. The surface is always covered with incised lines arranged in what is apparently intended for a definite order or design, but no two are alike." Moorehead (1900, pp. 358, 359) illustrates several specimens from Ohio. In size, shape and perforation they resemble very closely the "spools" found in New Zealand, and like the New Zealand specimens, nothing definite is known of their purpose.

The writer has no desire to enter into a controversy with Goffe (1933, also republished with comments by the Editors in the *Polynesian Journal*, 1934, p. 130) but he does want to assert his belief that spools were not necessary for the Maori drill. Further in the case of one specimen (fig. 26, 19561.2) of two holes drilled from each end to meet about the middle, both are skewed, hence the "spool" if used on a drill would be set at a rather acute angle. It would then not be so effective as if it were placed square on the spindle.

Although both these specimens are figured by Skinner (1934, figs. 99, 100) they are figured here in order to have them associated with this record of Oruarangi. In any case, he did not give a detailed description. The larger specimen (fig. 26) is 43 mm. in length, and greatest diameter 48 mm. The sides show three wide grooves, which vary between 9 and 11 mm. in width, and four narrow ridges, which are decorated with a number of small cuts or notches irregularly spaced. The hole perforating the longitudinal axis is 6 mm. in diameter at the mouth, but narrows progressively. A flattened surface prevents the junctions of the grooves, and on this flattened surface are two holes inlaid with small discs of *paua* shell. *Paua* shell discs are also found at two other points on the outer grooves.

The smaller specimen (fig. 27, No. 19561.1) differs slightly in appearance, and as pointed out by Skinner (1934, p. 106) is more closely allied to certain bone ornaments. It is 39 mm. in length and 26 mm. in diameter. A narrow ridge, which is the thickest portion of the "spool," separates the two wide grooves. Apart from the ridge there is no attempt at decoration, no notches or cuts of any sort being present. Effect is procured by the careful shaping of the "spool" and the finish, consisting of a high polish which produced a shiny surface. The hole is roughly circular at the mouth, is 6 mm. in diameter, but is not central at either end.

From a study of the stone ornaments of the area there was no example peculiar to the site. Everything studied was of general distribution and for that reason lacks something of the interest pertaining to special types. Nevertheless, it was deemed worthy of record in order to indicate the range of material found at Oruarangi.

Further papers will be necessary for the completion of the series, for it is felt that the wealth of material from such a small area warrants fairly detailed treatment.

The writer gratefully records his thanks for the assistance rendered by Mr. D. A. Brown, B.Sc., in identifying the material from which the adzes were fashioned, and to Mr. A. G. Stevenson for continuing the excellent photographic record of the specimens, a task which he began in the first paper of this series.

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- Figs. 1 a-c, 2 a-c. Front, back and side views of greywacke adzes.  
Type A, Oruarangi.
- Figs. 3 a-c, 4 a-c. Front, back and side views of greywacke adzes.  
Type B, Oruarangi.

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Fig. 6 a-c. Front, back and side view of large greywacke adze, showing evidence of chipping and bruising.

Fig. 7 a-c. Front, back and side view of greywacke adze.

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Fig. 9 a-c. Front, back and side view of a greenstone adze. Side view shows evidence of the original cuts.

Fig. 10 a-c. Front, back and side view of adze of *kawakawa* greenstone.

Figs. 12, 13. Greenstone adzes. Compare bevels with those of 3b and 4b.



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- Fig. 5 a-b. Stone adze with a grooved tang, back and side views.  
Fig. 8 a-c. Front, back and side views of a stone chisel, possessing grooves on the sides near the poll.  
Fig. 11 a-b. Front and back views of a greenstone adze in process of division to form three chisels.  
Figs. 14-19. Small greenstone chisels. Fig. 14 in process of division; fig. 15 perforated for suspension; fig. 16 "skew" chisel.  
Fig. 20. Greenstone chisel, circular in section.

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- Figs. 21-23. Greenstone pendants (*kurukuru*).  
Fig. 24. Curved greenstone pendant (*tautau*).  
Fig. 25 a-b. Front and back view of a “headless” *hei tiki*.  
Fig. 26. Notched “spool” ornament.  
Fig. 27. “Spool” ornament.